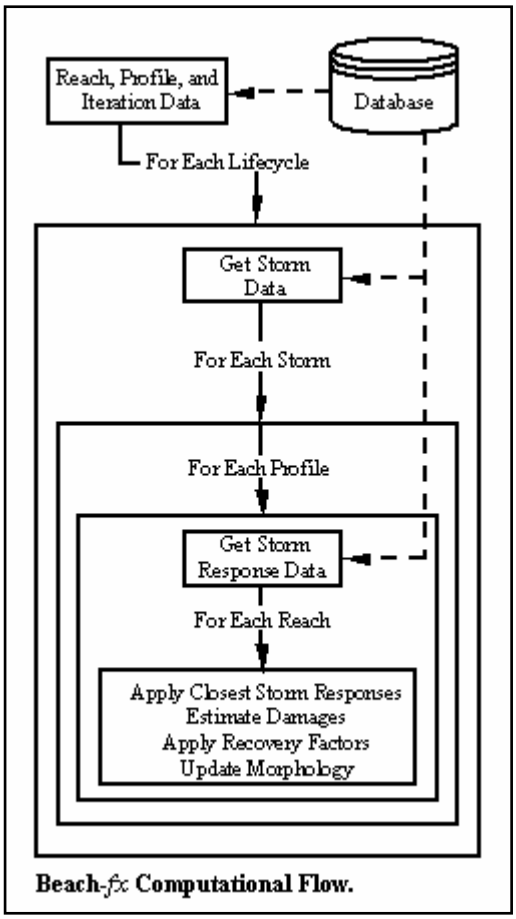
US Army Corps of Engineers®

Flood&Coastal Storm Damage Reduction R&D Program

Beach-*fx*

Description

Beach-*fx* is a Monte Carlo simulation model being developed, tested, enhanced, and documented. The model links the predictive capability of coastal evolution models with project area infrastructure information (structure inventory), structural damage functions, and economic valuations to estimate the costs and benefits of alternative project designs. The model fully incorporates risk and uncertainty. Beach-*fx* is part of a capability being developed at the U.S. Army Engineer Research and Development Center-Coastal and Hydraulics Laboratory (ERDC-CHL) to predict morphology evolution and the associated damages imparted by coastal storm events. The system also predicts the costs of shore protection alternatives with risk and uncertainty over multiple project life cycles.



Beach-*fx* Computational Flow.

Benefits

Linkages between engineering analysis capabilities (project performance and evolution) and planning functions (alternative analysis and economic justification) with respect to coastal storm damage reduction projects require strengthening within the Corps. Present practice is inconsistent between field offices and often relies on locally developed models that may or may not incorporate risk and uncertainty. Standardized, risk-based economic justification for coastal storm damage reduction projects is required to promote consistent and defendable economic evaluations of coastal storm protection projects. A thorough and realistic approach to beach nourishment design is achieved through life-cycle analyses.

Status

Beach-*fx* Version 1.0 is presently available for use. Research continues to improve and enhance model capabilities and periodic model upgrades are anticipated. The next suite of Beach-*fx* model enhancements will address issues raised through the independent certification review process brought about through the Planning Model Improvement Program (PMIP) lead by headquarters.

Distribution Source(s)

The Beach-*fx* software and user's manual may be downloaded from the Beach-*fx* Web page at http://hera.pmcl.com/beachfx/.

Available Documentation

Beach Beach-*fx* 1.0 User's Guide http://hera.pmcl.com/beachfx/software.aspx

A training exercises booklet and a series of instructional and background PowerPoint presentations are available on CD. Contact Mark Gravens for more information. Also available are a number of journal and conference papers. Anticipated near-term documentation include a technical manual and an applications guide.

Available Training

Beach-*fx* training has occurred through a national roll-out workshop and training session and a series of regional training workshops. Additional training can be arranged on a District or regional basis upon request provided resources are available to cover the costs of delivering the training.

Available Support

Application support can be obtained by contacting Mark Gravens at ERDC-CHL.

Application

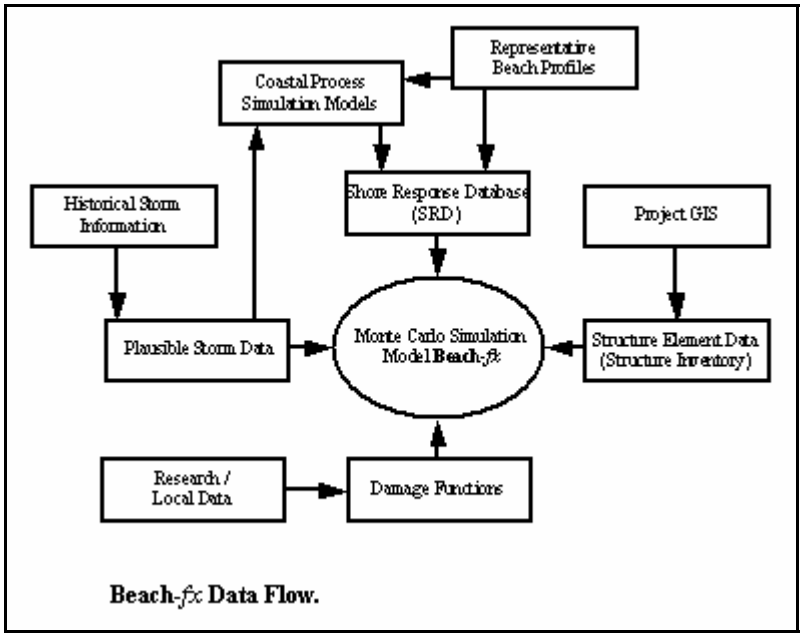
Beach- *fx* is currently being applied in the following studies: USACE, Mobile District, General Reevaluation Report, Panama City, FL, Beaches where Beach-*fx* is being used to evaluate the economics of extending the project by an additional mile; USACE, Mobile District, Walton County, FL, Feasibility Study; USACE, Norfolk District, Wiloughby Spit, VA, Feasibility Study; and USACE, Alaska District, Barrow, AK, Feasibility Study.

Point of Contact

Mark B. Gravens, Coastal and Hydraulics Laboratory, US Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180, (601) 634-3809 or Email: Mark.B.Gravens@usace.army.mil

Partners

N/A



Beach-*fx* Data Flow.